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LUMINARY Memo # 212

To: Distribution
From: L. Berman
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Subject: Effects of Delayed Tipover on Ascent Trajectories

The incorporation of the abort channel override in Luminary leads to the possibility of the crew having to do aborts manually until the necessary keystrokes can be made to call the abort program via V37. This could delay the tipover maneuver until the radial rate has become much larger than the normal tipover threshold of 40 fps.

To study the effect of this some ascents were run on a fairly simple, point mass, engineering simulation program. These ascents are equivalent to aborts from, or near, the lunar surface. Similar results would be expected from earlier aborts.

The attached figure shows trajectory parameters as affected by varying the tipover velocity from 40 to 160 fps. The latter value is equivalent to a tipover delay of 24 sec. This delay would cost about 79 lb. of fuel and cause insertion to be about 240 feet higher than nominal.

